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PTO/SB/08a (08-03)

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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Sheet 1

of 9

Application Number	10/625,480
Filing Date	July 22, 2003
First Named Inventor	Chen, et al.
Group Art Unit	2818
Examiner Name	Phuc T. Dang
Attorney Docket Number	AMAT/5335.Y1/CPI/COPPER/PJS
Submission Date	April 1, 2005

**U.S. PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number-Kind Code <sup>2</sup> (if known)			
PP ↑	A1	US-4486487	12/4/1984	Suntola, et al.	SKanp <sup>PP</sup>
	A2	US-5306666	4/26/1994	Izumi, et al.	
	A3	US-5374570	12/20/1994	Nasu, et al.	
	A4	US-5503875	4/2/1996	Imai, et al.	
	A5	US-5526244	6/11/1996	Bishop	
	A6	US-5711811	1/27/1998	Suntola, et al.	
	A7	US-5916365	6/29/1999	Sherman	
	A8	US-6015590	1/18/2000	Suntola, et al.	
	A9	US-6107208	8/22/2000	Cheng, et al.	
	A10	US-6139700	10/31/2000	Kang, et al.	
PP	A11	US-6174809	1/16/2001	Kang, et al.	
	A12	US-6197683	3/6/2001	Kang, et al.	
	A13	US-6200893	3/12/2001	Sneh	
	A14	US-6203613	3/20/2001	Gates, et al.	
	A15	US-6207302	3/27/2001	Suglura, et al.	
	A16	US-6207487	3/27/2001	Kim, et al.	
	A17	US-6270572	8/7/2001	Kim, et al.	
	A18	US-6284646	9/4/2001	Leem	
	A19	US-6287965	9/11/2001	Kang, et al.	
	A20	US-6305314	10/23/2001	Sneh, et al.	
	A21	US-6342277	1/29/2002	Sherman	
	A22	US-6348376	2/19/2002	Lim, et al.	
	A23	US-6358829	3/19/2002	Yoon, et al.	
	A24	US-6372598	4/16/2002	Kang, et al.	
	A25	US-6391785	5/21/2002	Satta, et al.	
	A26	US-6391803	5/21/2002	Kim, et al.	
	A27	US-6399491	6/4/2002	Jeon, et al.	
	A28	US-6416577	7/9/2002	Suntola, et al.	

Examiner

PHUC T. DANG

Date Considered

5/17/2005

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Sheet 2

of 9

Application Number

10/625,480

Filing Date

July 22, 2003

First Named Inventor

Chen, et al.

Group Art Unit

2818

Examiner Name

Phuc T. Dang

Attorney Docket Number

AMAT/5335.Y1/CPI/COPPER/PJS

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		Number-Kind Code <sup>2</sup> (if known)			
P.D.	A29	US-6416822	7/9/2002	Chiang, et al.	_____
↑	A30	US-6428859	8/6/2002	Chiang, et al.	_____
	A31	US-6451119	9/17/2002	Sneh, et al.	_____
	A32	US-6451695	9/17/2002	Sneh	_____
	A33	US-6458701	10/1/2002	Chae, et al.	_____
	A34	US-6468924	10/22/2002	Lee, et al.	_____
	A35	US-6475276	11/5/2002	Elers, et al.	_____
	A36	US-6475910	11/5/2002	Sneh	_____
	A37	US-6478872	11/12/2002	Chae, et al.	_____
	A38	US-6482733	11/19/2002	Raaijmakers, et al.	_____
	A39	US-6495461	12/17/2002	Tsubouchi, et al.	_____
	A40	US-6511539	1/28/2003	Raaijmakers	_____
	A41	US-6534395	3/18/2003	Werkhoven, et al.	_____
	A42	US-6548424	4/15/2003	Pulkonen	_____
	A43	US-6551929	4/22/2003	Kori, et al.	_____
	A44	US-6569501	5/27/2003	Chiang, et al.	_____
	A45	US-6596602	7/22/2003	Iizuka, et al.	_____
	A46	US-6596643	7/22/2003	Chen, et al.	_____
	A47	US-6599572	7/29/2003	Saanila, et al.	_____
	A48	US-6607976	8/19/2003	Chen, et al.	_____
	A49	US-6620670	9/16/2003	Song, et al.	_____
	A50	US-6620723	9/16/2003	Byun, et al.	_____
	A51	US-6630201	10/7/2003	Chiang, et al.	_____
	A52	US-6630413	10/7/2003	Todd	_____
	A53	US-6632279	10/14/2003	Ritala, et al.	_____
	A54	US-6660660	12/9/2003	Haukka, et al.	_____
✓	A55	US-6686271	2/3/2004	Raaijmakers, et al.	_____
P.D.	A56	US-6803272	10/12/2004	Halliyal, et al.	_____

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Date Considered

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Sheet 3

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10/625,480

Filing Date

July 22, 2003

First Named Inventor

Chen, et al.

Group Art Unit

2818

Examiner Name

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		Number-Kind Code <sup>2</sup> (if known)			
PD	A57	US-20010000866	5/10/2001	Sneh, et al.	_____
↑	A58	US-20010002280	5/31/2001	Sneh	_____
	A59	US-20010009140	7/26/2001	Bondestam, et al.	_____
	A60	US-20010009695	7/26/2001	Saanila, et al.	_____
	A61	US-20010024387	9/27/2001	Raaijmakers, et al.	_____
	A62	US-20010024871	9/27/2001	Yagi	_____
	A63	US-20010028924	10/11/2001	Sherman	_____
	A64	US-20010034123	10/25/2001	Jeon, et al.	_____
	A65	US-20010041250	11/15/2001	Werkhoven, et al.	_____
	A66	US-20010050039	12/13/2001	Park, et al.	_____
	A67	US-20010054730	12/27/2001	Kim, et al.	_____
	A68	US-20020000598	1/3/2002	Kang, et al.	_____
	A69	US-20020007790	1/24/2002	Park	_____
	A70	US-20020016084	2/7/2002	Todd	_____
	A71	US-20020021544	2/21/2002	Cho, et al.	_____
	A72	US-20020031618	3/14/2002	Sherman	_____
	A73	US-20020041931	4/11/2002	Suntola, et al.	_____
	A74	US-20020047151	4/25/2002	Kim, et al.	_____
	A75	US-20020048635	4/25/2002	Kim, et al.	_____
	A76	US-20020052097	5/2/2002	Park	_____
	A77	US-20020060363	5/23/2002	Xi, et al.	_____
	A78	US-20020068458	6/6/2002	Chiang, et al.	_____
	A79	US-20020073924	6/20/2002	Chiang, et al.	_____
	A80	US-20020074588	6/20/2002	Lee	_____
	A81	US-20020076481	6/20/2002	Chiang, et al.	_____
	A82	US-20020076507	6/20/2002	Chiang, et al.	_____
✓	A83	US-20020076508	6/20/2002	Chiang, et al.	_____
PD	A84	US-20020081844	6/27/2002	Jeon, et al.	_____

Examiner

PHUC T. DANG

Date Considered

5/17/2005

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# **INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

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Sheet 4

of 9

Application Number	10/625,480
Filing Date	July 22, 2003
First Named Inventor	Chen, et al.
Group Art Unit	2818
Examiner Name	Phuc T. Dang
Attorney Docket Number	AMAT/5335.Y1/CPI/COPPER/PJS
Submission Date	April 1, 2005

## **U.S. PATENT DOCUMENTS**

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		Number-Kind Code <sup>2</sup> (if known)			
PD	A85	US-20020086111	7/4/2002	Byun, et al.	_____
↑	A86	US-20020086507	7/4/2002	Park, et al.	_____
	A87	US-20020094689	7/11/2002	Sandhu, et al.	_____
	A88	US-20020104481	7/18/2002	Bachhofer, et al.	_____
	A89	US-20020106536	8/8/2002	Lee, et al.	_____
	A90	US-20020117399	8/29/2002	Chen, et al.	_____
	A91	US-20020135071	9/26/2002	Kang, et al.	_____
	A92	US-20020144655	10/10/2002	Chiang, et al.	_____
	A93	US-20020144657	10/10/2002	Chiang, et al.	_____
	A94	US-20020146511	10/10/2002	Chiang, et al.	_____
	A95	US-20020155722	10/24/2002	Satta, et al.	_____
	A96	US-20020162508	11/7/2002	Sneh, et al.	_____
	A97	US-20020164421	11/7/2002	Chiang, et al.	_____
	A98	US-20020164423	11/7/2002	Chiang, et al.	_____
	A99	US-20020172768	11/21/2002	Endo, et al.	_____
	A100	US-20020177282	11/28/2002	Song	_____
	A101	US-20020182320	12/12/2002	Leskela, et al.	_____
	A102	US-20020187256	12/12/2002	Elers, et al.	_____
	A103	US-20020187631	12/12/2002	Kim, et al.	_____
	A104	US-20020197402	12/26/2002	Chiang, et al.	_____
	A105	US-20020197863	12/26/2002	Mak, et al.	_____
	A106	US-20030013300	1/16/2003	Byun	_____
	A107	US-20030013320	1/16/2003	Kim, et al.	_____
	A108	US-20030031807	2/13/2003	Elers, et al.	_____
	A109	US-20030032281	2/13/2003	Werkhoven, et al.	_____
	A110	US-20030042630	3/6/2003	Babcoke, et al.	_____
✓	A111	US-20030049931	3/13/2003	Byun, et al.	_____
PD	A112	US-20030049942	3/13/2003	Haukka, et al.	_____

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Date Considered

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Sheet 5

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Filing Date	July 22, 2003
First Named Inventor	Chen, et al.
Group Art Unit	2818
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PD	A113	US-20030054631	3/20/2003	Raaijmakers, et al.	—
↑	A114	US-20030072884	4/17/2003	Zhang, et al.	—
	A115	US-20030072975	4/17/2003	Shero, et al.	—
	A116	US-20030082296	5/1/2003	Elers, et al.	—
	A117	US-20030082300	5/1/2003	Todd, et al.	—
	A118	US-20030082301	5/1/2003	Chen, et al.	—
	A119	US-20030082307	5/1/2003	Chung, et al.	—
	A120	US-20030089308	5/15/2003	Raaijmakers, et al.	—
	A121	US-20030089942	5/15/2003	Bhattacharyya	—
	A122	US-20030101927	6/5/2003	Raaijmakers	—
	A123	US-20030106490	6/12/2003	Jallepally, et al.	—
	A124	US-20030108674	6/12/2003	Chung, et al.	—
	A125	US-20030116087	6/26/2003	Nguyen, et al.	—
	A126	US-20030116804	6/26/2003	Visokay, et al.	—
	A127	US-20030124262	7/3/2003	Chen, et al.	—
	A128	US-20030129826	7/10/2003	Werkhoven, et al.	—
	A129	US-20030134508	7/17/2003	Raaijmakers, et al.	—
	A130	US-20030143328	7/31/2003	Chen, et al.	—
	A131	US-20030143839	7/31/2003	Raaijmakers, et al.	—
	A132	US-20030143841	7/31/2003	Yang, et al.	—
	A133	US-20030160277	8/28/2003	Bhattacharyya	—
	A134	US-20030165615	9/4/2003	Aaltonen, et al.	—
	A135	US-20030166318	9/4/2003	Zheng, et al.	—
	A136	US-20030168750	9/11/2003	Basceri, et al.	—
	A137	US-20030172872	9/18/2003	Thakur, et al.	—
	A138	US-20030173586	9/18/2003	Moriwaki, et al.	—
	A139	US-20030185980	10/2/2003	Endo	—
PD	A140	US-20030186495	10/2/2003	Saanila, et al.	—

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PD	A141	US-20030186561	10/2/2003	Law, et al.	—
↑	A142	US-20030189232	10/9/2003	Law, et al.	—
	A143	US-20030190423	10/9/2003	Yang, et al.	—
	A144	US-20030190497	10/9/2003	Yang, et al.	—
	A145	US-20030190804	10/9/2003	Glenn, et al.	—
	A146	US-20030194853	10/16/2003	Jeon	—
	A147	US-20030198754	10/23/2003	Xi, et al.	—
	A148	US-20030205729	11/6/2003	Bascari, et al.	—
	A149	US-20030213560	11/20/2003	Wang, et al.	—
	A150	US-20030215570	11/20/2003	Seutter, et al.	—
	A151	US-20030216981	11/20/2003	Tillman	—
	A152	US-20030232554	12/18/2003	Blum, et al.	—
	A153	US-20030235961	12/25/2003	Metzner, et al.	—
	A154	US-20040009307	1/15/2004	Koh, et al.	—
	A155	US-20040013803	1/22/2004	Chung, et al.	—
	A156	US-20040018304	1/29/2004	Chung, et al.	—
	A157	US-20040018723	1/29/2004	Chung, et al.	—
	A158	US-20040018747	1/15/2004	Visokay, et al.	—
✓	A159	US-20040033698	2/19/2004	Lee, et al.	—
PD	A160	US-20040043630	3/4/2004	Vaarstra, et al.	—

## **FOREIGN PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>5</sup> (if known)				
PD	B1	EP 1 167 569	1/2/2002	IPS LIMITED	—	
↑	B2	GB 2 355 727	5/2/2001	SAMSUNG ELECTRONICS CO., LTD	—	
	B3	JP 07-300649	11/14/1995	KOBE STEEL LTD	—	
↓	B4	JP 01-143221	6/5/1989	NEC CORP	—	
PD	B5	JP 02-246161	10/1/1990	FUJITSU LTD	—	

Examiner

PHUC T. DANG

Date Considered

5/17/2005

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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 7

of 9

Application Number

10/625,480

Filing Date

July 22, 2003

First Named Inventor

Chen, et al.

Group Art Unit

2818

Examiner Name

Phuc T. Dang

Attorney Docket Number

AMAT/5335.Y1/CPI/COPPER/PJS

Submission Date

April 1, 2005

**FOREIGN PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>2</sup> -Number <sup>3</sup> -Kind Code <sup>4</sup> (if known)				
PD	B6	JP 10-308283	11/17/1998	DENSO CORP (US)	—	
↑	B7	JP 2000-178735	6/27/2000	—	—	
	B8	JP 2000-31387	1/28/2000	FUJI ELECTRIC CO LTD	—	
	B9	JP 2000-58777	2/25/2000	SAMSUNG ELECTRONICS CO., LTD	—	
	B10	JP 2001-111000	4/20/2001	—	—	
	B11	JP 2001-172767	6/18/2002	ASM MICROCHEMISTRY OY	—	
	B12	JP 2001-220294	8/14/2001	DENSO CORP	—	
	B13	JP 2001-254181	9/18/2001	TOKYO ELECTRON LTD	—	
	B14	WO 00/15865	3/23/2000	ASM MICROCHEMISTRY LTD	—	
	B15	WO 00/16377	3/23/2000	GENITECH CO., LTD.	—	
	B16	WO 00/54320	9/14/2000	GENUS, INC.	—	
	B17	WO 00/63957	10/26/2000	GENITECH CO., LTD.	—	
	B18	WO 00/79576	12/28/2000	GENITECH INC.	—	
	B19	WO 01/15220	3/1/2001	ASM AMERICA, INC.	—	
	B20	WO 01/17692	3/15/2001	ASM AMERICA, INC.	—	
	B21	WO 01/27346	4/19/2001	ASM MICROCHEMISTRY OY	—	
	B22	WO 01/27347	4/19/2001	ASM MICROCHEMISTRY OY	—	
	B23	WO 01/29280	4/26/2001	ASM AMERICA, INC.	—	
	B24	WO 01/29891	4/26/2001	ASM AMERICA, INC.	—	
	B25	WO 01/29893	4/26/2001	ASM AMERICA, INC.	—	
	B26	WO 01/66832	9/13/2001	ASM AMERICA, INC.	—	
	B27	WO 02/01628	1/3/2002	APPLIED MATERIALS, INC.	—	
	B28	WO 02/45167	6/6/2002	ASM MICROCHEMISTRY OY	—	
	B29	WO 02/45871	6/13/2002	ANGSTRON SYSTEMS, INC.	—	
	B30	WO 02/67319	8/29/2002	ASM MICROCHEMISTRY OY	—	
↓	B31	WO 96/17107	6/6/1996	MIKROKEMIA OY	—	
PD	B32	WO 98/51838	11/19/1998	APPLIED MATERIALS, INC.	—	

Examiner

PHUC T. DANG

Date Considered

5/17/2005

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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Sheet 8

of 9

Application Number	10/625,480
Filing Date	July 22, 2003
First Named Inventor	Chen, et al.
Group Art Unit	2818
Examiner Name	Phuc T. Dang
Attorney Docket Number	AMAT/5335.Y1/CPI/COPPER/PJS
Submission Date	April 1, 2005

**FOREIGN PATENT DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>2</sup> -Number <sup>3</sup> -Kind Code <sup>4</sup> (if known)				
PD	B33	WO 99/01595	1/14/1999	NESTE OY		
PD	B34	WO 99/29924	6/17/1999	NESTE OYJ		

**NON PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T <sup>2</sup>
PD	C1	George, et al. "Surface Chemistry for Atomic Layer Growth," J. Phys. Chem. 1996, 100, pp. 13121-13131	
	C2	Hwang, et al. "Nanometer-Size $\alpha$ -PbO <sub>2</sub> -type TiO <sub>2</sub> in Garnet: A Thermobarometer for Ultrahigh-Pressure Metamorphism," Science Vol. 288 (14 Apr 2000)	
	C3	Klaus, et al. "Atomic Layer Deposition of SiO <sub>2</sub> Using Catalyzed and Uncatalyzed Self-Limiting Surface Reactions," Surface Review and Letters, Vol. 6, Nos. 3 & 4 (1999) 435-448	
	C4	Lee, et al. "Cyclic Technique for the Enhancement of Highly Oriented Diamond Film Growth," Thin Solid Films 303 (1997) pp. 264-269	
	C5	Martensson, et al. "Use of Atomic Layer Epitaxy for Fabrication of Si/TiN/Cu Structures," J. Vac. Sci. & Tech. B, Vol. 17, No. 5, (Sept. 1999) pp.2122-2128	
	C6	Min, et al. "Atomic Layer Deposition of TiN Thin Films by Sequential Introduction of Ti Precursor and NH <sub>3</sub> ," Mat. Res. Soc. Symp. Proc. Vol. 514 (1998)	
	C7	Min, et al. "Chemical Vapor Deposition of Ti-Si-N Films with Alternating Source Supply," Mat. Res. Soc. Symp. Proc. Vol. 564 (1999) pp. 207-210	
	C8	Min, et al. "Metal-organic Atomic-layer Deposition of Titanium-silicon-nitride Films," Applied Physics Letters, Vol. 75, No. 11 (11 Sep 1999) pp. 1521-1523	
	C9	Niinisto, et al. "Synthesis of Oxide Thin Films and Overlayers by Atomic Layer Epitaxy for Advanced Applications," Materials Science and Engineering B41 (1996) 23-29	
	C10	Proceedings of the ICEEE 1998 International Interconnect Technology Conference - San Francisco, California, June 1-3, 1998	
	C11	Ritala, et al. "Atomic Force Microscopy Study of Titanium Dioxide Thin Films Grown by Atomic Layer Epitaxy," Thin Solid Films, Vol. 228, No. 1-2 (15 May 1993), pp.32-35	
	C12	Ritala, et al. "Atomic Layer Epitaxy Growth of TiN Thin Films From TiL <sub>4</sub> and NH <sub>3</sub> ," J. Electrochem. Soc., Vol. 145, No. 8 (Aug, 1998) pp. 2914-20	
PD	C13	Ritala, et al. "Atomic Layer Epitaxy Growth of TiN Thin Films," J. Electrochem. Soc., Vol. 142, No. 8, August 1995	

Examiner

PHUC T. DANG

Date Considered

5/17/2005

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Substitute for form 1449B/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(Use as many sheets as necessary)</i>				Application Number	10/625,480
				Filing Date	July 22, 2003
				First Named Inventor	Chen, et al.
				Group Art Unit	2818
				Examiner Name	Phuc T. Dang
				Attorney Docket Number	AMAT/5335.Y1/CPII/COPPER/PJS
				Submission Date	April 1, 2005
Sheet	9	of	9		

## NON PATENT LITERATURE DOCUMENTS

[illegible]

**Examiner**

PHUC T. DANG

**Date Considered**

5/17/2005

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